

Functional Protein Solutions from Whey and Egg Inhibit Oil Pickup in Fully Fried, Battered, and Breaded Products

Brannan, R.G., Mah, E., Schott, M., and Myers, A.S.

School of Human and Consumer Sciences, Ohio University, Athens, Ohio, USA

This research deals with decreasing oil absorption in deep fried foods using protein solutions. These protein solutions are easily implemented in processing situations, unlike other strategies such as edible films, which are difficult to adopt in industrial environments because of processing constraints. The objective of this research was to determine the effectiveness of addition of proteins from soy, egg, and milk as a post-breading dip. Formed chicken patties were battered and breaded then dipped in protein solutions of varying concentrations prepared from soy protein isolate, egg white, whey protein isolate, *B*-lactoglobulin, or *a*-lactoalbumin. The patties were fried in a commercial fryer to 75°C. Yield was calculated based on the weight of the patties before and after frying. Lipid and moisture content of the patties were obtained using standard methods for meat products. Penetrometry measurements were performed using a TA-XT2 texture analyzer with a three-point bend rig at 1 mm/s with a 25 kg load cell. Breaded patties treated with egg white reduced oil pickup by 34% and caused an 11% increase in moisture retention compared to an undipped control. Whey protein isolate and its major protein fractions caused a reduction in oil pickup of up to 40% but did not significantly increase moisture retention. Oil pickup and moisture retention were not significantly influenced by soy protein isolate compared to an undipped control. Texture of the patties treated with egg white and soy protein isolate were different from the control, while patties treated with soy were not. This research is particularly relevant in light of recent findings that have shown Americans, especially children, are becoming heavier, so processes that reduce energy intake in commonly consumed foods could provide another weapon in the battle against obesity.